Establishing and Operating Grower-Owned Organizations for Integrated Pest Management

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FOREWORD

County Extension agents and the managers and directors of local cooperatives should find this publication informative on organizing and operating grower-owned organizations to deliver pest management services to producers. It should also help in counseling with farmers about alternative delivery systems.

Extension specialists and regional managers and directors of cooperatives will find this useful in guiding their respective professionals in organizing and evaluating grower-owned organizations for pest management.

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By
J.M. Good, Director, Pest Management Programs, Extension Service
Ralph E. Hepp, Extension Economist, Michigan State University
Paul O. Mohn, Economist, Cooperatives, Extension Service
Donald L. Vogelsang, Agricultural Economist, Farmer Cooperative Service

THE NEED

Crop losses caused by pests are enormous. Combined losses from insects, diseases, nematodes, and weeds probably exceed 30 percent for most crops. This is because controls are improperly applied or are technologically inadequate.

Since about 1950, attempts to prevent pest damage have resulted is an increasing use of pesticides. They cost U.S. farmers $1.8 billion in 1975. They are and will continue to be an essential component of crop protection systems.

During the early 1960's one economist suggested that U.S. crop receipts increased 4 dollars for every dollar spent on pesticides. While this ratio had probably declined by 1975, pesticides remained a good investment for the average farmer. Many farmers consider pesticides essential to a profitable business.

Pesticides can be applied too heavily, however. A heavy dependence on repeated applications of pesticides, especially insecticides, miticides, and fungicides, has created numerous problems. These include environmental considerations and resistance among insects, mites and disease pathogens; emergence of secondary insect and weed pests; resurgence of pest populations; and frequent crop and environmental contamination.

These problems have been increased by frequent spraying according to the calendar, improper timing of sprays, and use of broad spectrum or mixtures of pesticides that kill beneficial as well as pest organisms. These practices allowed pesticide-resistant species of pests to develop. This in turn required even more use of pesticides, thereby increasing costs and frequently reducing yields. Other effective pest suppression methods have not been practiced or have not been used in harmony with pesticides to obtain the best possible results.

A SOLUTION

These problems led to development of a systematic approach to crop protection that is based on sound economic, ecological, and technological considerations. The system is called *integrated pest management* (IPM).

Under this system, depending on the pest complex and cropping schedule, pesticides are applied on an as-needed basis. They are applied in combination with cultural practices, use of resistant varieties and crop rotation, sanitation, and introduction and conservation,of natural enemies. Sometimes autocidal techniques (release of sterile insects) and other control methods may be appropriate.

The IPM system depends on effective but balanced use of pesticides essential to modern agriculture.

The IPM system relies on "scouting" fields and other types of monitoring, to check on and predict the numbers of plant pests such as insects or diseases. Then pest management specialists "integrate" this pest count with data on weather, harvest dates, etc., to obtain the best, scientific, custom-fitted advice for growers on strategies for suppression or prevention. This also includes followup to see that pests are not causing economic damage.

The purpose is not to get rid of all pests in a given field, but to hold damage to an economical, acceptable level. This helps the farmer use

the least possible amount of pesticide to do the job, protecting both his investment and the quality of the environment.

Integrated pest management today is a proven technical crop production practice and decisionmaking process for managing crop pests.

SOME EXPERIMENTAL PROGRAMS

Most experimental and demonstration pest management programs conducted to date have concentrated on management of insects, but the concept of IPM is now being expanded to include diseases, nematodes, and weeds. Also, IPM demonstrations are being conducted for management of pests in livestock feedlots, and for renovation of pastures utilizing dung beetles to consume cattle droppings in order to control intestinal parasites of livestock.

What are the benefits? IPM is economical. It provides effective control of key pests, and it reduces pesticide threats to the environment. It is not uncommon for cotton farmers to reduce use of pesticides 30-50 percent compared with nonparticipating growers.

Some examples of more economical insect management include:

- One South Carolina cotton farmer reduced the number of pesticide applications from 27 to 17 in 1974.

- Texas growers reduced insecticide use on sorghum by 73 percent.

- New Jersey sweet corn growers cut insecticide usage by as much as 20 percent with no sacrifice of quality.

More economical control of other pests include:

- Up to 15 applications of antibiotic sprays were eliminated in some California pear orchards.

- Applications of herbicides, as well as insecticides, on midwestern corn fields became more effective.

- Oklahoma growers had an increase of 400 pounds of peanuts per acre, with little increase in pesticide use, through an IPM program for diseases, nematodes, weeds, and insects.

In these and numerous other demonstrations, IPM has—

- Maintained yields at the expected level or increased them, compared with conventional spray programs

- Conserved natural enemies of pests or increased them in fields

- Caused sprays to be timed for maximum effectiveness

- Minimized pesticide resistance and secondary pest resurgence problems

- Increased net profits to farmers more than enough to offset the cost of pest management advisory services.

The environment benefits from reduced potential for pesticide contamination of crops, soil, and water, and less frequent exposure of people to pesticides.

SERVING FARMERS

Why are farmers adopting integrated pest management? As well-educated, informed businessmen, few can devote the necessary time to the increasingly complex and regulated technology of crop protection. They can hire others to monitor (scout) fields on a prescribed regular basis to identify or assess the crop loss potential of developing pest populations.

As a manager, a farmer needs to employ professional advisory services in order to make crucial decisions on complex pest control procedures. Pesticides cannot be applied on an as-needed basis without detailed knowledge of pest densities and crop, soil, and weather conditions. Also, alternate effective methods of controlling pests must be considered in making decisions related to the total farm management system. Professionals have the latest information on resistant varieties, cultural procedures, and registered and recommended pesticides.

What types of IPM services do farmers need? Their main needs are—

- Monitoring of pests

- Analysis and interpretation of data
- Counseling and advice
- Selection and application of controls
- Other management and service functions.

Methods of monitoring pests must be efficient and accurate. Pest control decisions must be made in relation to probable losses so that the potential for damage can be predicted. Precise recommendations must be made to achieve maximum effectiveness and compatibility of pest management practices with other farm operations. Up-to-date information and consultation must be provided farmers so that they can make management decisions based on detailed knowledge of pest densities and the economic benefits of alternate control decisions. Suitable records must be maintained not only of pest populations but also of weather, soil, and crop conditions, dates and amounts of pesticides applied, and other production inputs, for farmers to get maximum benefits from the management system.

IPM advisory services can be supplied by cooperatives, private consultants, Extension personnel, and to a limited extent, representatives of the pesticide industry. Most public sector programs will be supportive in nature and provide technological backup for private sector programs.

Services need to be delivered where interested growers are in sufficient numbers to allow effective use of manpower and equipment. Large acreages, with fields in close proximity, facilitate scouting and supervision. This reduces costs to farmers and promotes community participation, making pest management more effective.

COMPARISON OF GROWER-OWNED IPM SERVICES

Only a few grower-owned organizations are now providing integrated pest management services to U.S. farmers. Four cases are presented here to demonstrate different organizational structures and operating procedures.

These represent organizational models that farmers are using to obtain integrated pest management services. This report describes procedures to help the reader develop such a grower-owned organization to carry out an integrated pest management program.

Grower-owned organizations are only one possible delivery system. Other approaches, such as private consultants, proprietary firms, and public institutions are alternatives for farmers to obtain IPM services.

The IPM idea can apply to many pest problems for a variety of crops, and is practiced by many farmers. However, cotton producers were the first to use grower-owned organizations for IPM. Therefore, the organizations described here are heavily weighted toward cotton production. Because insects are the primary pests in cotton, IPM was first formulated for insects, and later applied to other crop pests.

The objective is the same for each organization—to minimize economic damage to the crop by pests. They use various techniques and methods to achieve that objective through services to growers.

The first two organizations, Edgecombe Spray Program, Inc. and Growers Pest Management Corporation, are new organizations formed by farmers to provide IPM services. Safford Valley Cotton Growers Cooperative, Inc., is an example of an existing cooperative that expanded its services to provide IPM to its members. The fourth firm, Servi-Tech, Inc., is a new organization formed by local supply cooperatives to provide technical crop management services including IPM.

First, these organizations will be briefly described, then comparisons will be made under five headings:

- Crops grown and pest management recommendations
- Organizational characteristics
- Farmer services
- Financial aspects
- Legal documents.

Associations

Edgecombe Spray Program, Inc.

Edgecombe Spray Program, Inc., Tarboro, North Carolina, is one of eight spray groups organized between 1968 and 1974 in eastern North Carolina. All were patterned after the first group formed at Scotland Neck. Edgecombe Spray was incorporated and began operations in 1972.

This group illustrates how farmer leadership can mobilize to meet the threat of pests. Here the primary concerns were boll weevils and bollworms. Profitable cotton production requires control of these pests at the lowest possible cost for chemicals. Group buying is one approach to reducing cost of pesticides.

Edgecombe Spray exists mainly because farmers have exercised leadership and continue to do so. It exists also because of technical support from the Extension Service and the experienced leadership of a retired county Extension chairman.

This retired chairman functions as Edgecombe Spray's president. Operational activities are delegated to three farmers, who each chair a working committee. Thirteen committeemen comprise the board of directors.

During the summer the group also shares a full-time manager with the aerial applicator. He helps with nontechnical operations. The group relies heavily on Extension personnel for pesticide recommendations and scout training.

Through annual contracts with each member, Edgecombe Spray assumes full responsibility for controlling boll weevils and bollworms on cotton. To fulfill this obligation, Edgecombe Spray develops a control program, purchases the chemicals, hires and supervises the scouts, and contracts and assumes responsibility for the aerial application of pesticides and defoliants. Scouting usually saves about two chemical applications each season. Information on insect populations provided by scouts determines when insecticide applications are started. The group practices communitywide insect control and seeks a high level of participation. Once spraying begins, it usually continues at regular intervals of about 5 days each for the entire season.

Though incorporated as an investor, profit-making corporation, Edgecombe Spray functions on a cooperative nonprofit basis. Farmers have received significant refunds in 3 out of the 4 years of the group's existence.

Growers Pest Management Corporation

Growers Pest Management Corporation of Casa Grande, Arizona, was organized in 1973 as a nonprofit corporation. This Pinal County organization illustrates how farmers can use their grower-owned organization to deliver IPM programs. The IPM program was initiated in 1972 by the Arizona Extension Service and leading farmers as a pilot demonstration and educational program with financial support from the U.S. Department of Agriculture (USDA).

A manager was hired in 1975; this relieved the Extension staff of responsibility for the detailed operation of the program. It allowed Extension to concentrate on educating farmer members of the association and to assist the manager in training scouts. The manager operates the scouting program and counsels members about pest control for the crops entered into the program.

The objectives of the association are to advance Arizona agriculture by increasing crop yields and profit, and to increase pest control efficiency. This association operates a multicrop pest management and advisory service for its members. Based on scouting reports and technical information, the farmer decides on the type of pest control to use. He is free to purchase products and services from vendors of his choice. The county Extension agent or state Extension entomologist meets with the manager and scouts weekly during the growing season. This allows for additional training and counseling.

The association board requires the manager, officers, and employees responsible for funds and property to give adequate bonds. The cost of this is borne by the association. Accounts and records are audited each year and submitted to the members. An agreement is signed by

the corporation and each member for crops entered into the program. This agreement covers payment of fees and membership in the association.

Extension provided important leadership and planning functions during the first 3 years of the IPM program. Through the association, farmers have taken over complete financial responsibility for the program. Volunteer leadership by the farmers, through the board of directors, is a key to the association's success. An organizational structure that utilizes volunteers helps the corporation obtain and sustain good leadership.

Safford Valley Cotton Growers Co-op, Inc.

Safford Valley Cotton Growers Co-op, Inc., Safford Valley, Arizona, first became involved in IPM in 1968, after an unusually heavy infestation of the pink bollworm in 1967. Growers learned that the pest could put them out of cotton production. Something needed to be done.

As a consequence, growers formed the Pink Bollworm Committee with eight farmer leaders, and they obtained help from their ginning cooperative, the Safford Valley Cotton Growers Co-op. The cooperative helps by exercising authority over pest-control activities and by providing coordination and funding functions. The Pink Bollworm Committee manages the pest control program.

A leading farmer chairs the committee. He guides the committee to consensus decisions on selection of insect controls and contracting for chemicals, pest management, and aerial applicators. The contracting pest manager reports to this committee.

The pest manager consults on pest controls, hires and supervises the scouts, supplies such materials as sex lure traps, and makes recommendations regarding chemical applications. He and the committee enjoy a close working relationship with the state Extension entomologist.

Safford Valley uses this program to supply its patrons with the most economical control of cotton insects, mainly the pink bollworm. Thus, its current IPM program is confined to one crop and mainly to one pest. It's an integrated program, however, because it manages the bollworm with several controls, including cultural practices, beneficial insects, sex lures, and pesticides. Spraying is done as needed on individual fields.

The IPM program is part of a larger total package of services offered by the cooperative, which purchases pesticides and services at more economical rates than those available to nonparticipating farmers. It also provides credit to its patrons for these supplies and services.

Pest control contracts between the Safford Valley Co-op and its members specify services and charges. There is a unique procedure for paying for these services. Costs are deducted from cotton proceeds at the season's close. In this manner, though no refunds are paid, Safford Valley supplies the IPM program and related services to its members at the cooperative's costs.

Servi-Tech, Inc.

Servi-Tech, Inc., Dodge City, Kansas, is a technical service organization that provides farmers with technical crop and pest management information. It is used as a case example to show how a technical crop management organization can deliver pest management to farmers.

Servi-Tech, Inc., is owned by farmers indirectly through 15 local farm supply cooperatives in western Kansas. Three cooperatives incorporated Servi-Tech in 1975, each contributing $5,000 to $10,000. Twelve more cooperatives have since become members. Cooperative leaders saw the need for skilled technical help for farmers, and farmers encouraged the development of such an organization. Servi-Tech was incorporated as a separate entity, apart from the sponsoring cooperatives, in order to reduce the possibility of conflict with the pesticide sales department. This separates technical assistance and chemical sales in the farmer's decisionmaking.

The association manager and other employees are professionally trained technical

specialists with degrees in agronomy, entomology, plant pathology, pest management, etc. The board of directors includes representatives from the sponsoring cooperatives and operates with advisory committees made up of farmers who work with the board in planning services.

The association provides farmers a package including soil analysis and fertilizer recommendations, pest scouting and control recommendations, planting rates and dates, variety recommendations, irrigation requirements, equipment operation, progress reports on contracted crops, crop field records, and quality analysis of grain and hay crops. Servi-Tech specialists provide advice through personal and written contacts.

While Servi-Tech encourages farmers to make the maximum use of their associated cooperatives, its specialists are not connected with product sales and do not dictate where farmers purchase the pesticides or other crop inputs.

Servi-Tech sells only services. It limits product recommendations to commonly available products and practices. Crop recommendations and field reports are provided to the farmer and his local cooperative. The farmer can purchase his pesticides from his cooperative or any other supplier. This procedure separates technical assistance and sales in farmer decisionmaking. Some cooperatives are rebating part of the Servi-Tech fees and giving product discounts to farmers who belong to Servi-Tech co-ops and purchase most of their supplies from the cooperative.

Characteristics of Associations

Crops Grown and Pest Management Recommendations

The nature of the IPM program varies for each of the above organizations according to its objectives and the crops grown in the area (table 1). Cotton producers were instrumental in organizing the pest management program for Edgecombe Spray Program, Inc., Safford Valley Cotton Growers Cooperative, Inc., and Growers Pest Management Corporation. The program was limited to cotton in the first two

TABLE 1 - Crops grown and pest management recommendations

Grower-Owned Organization	Major Crops Grown by Participating Farmers	Crop(s) Included in the IPM Program
Edgecombe Spray Program, Inc. (North Carolina)	Corn, soybeans, cotton, tobacco, and peanuts	Cotton
Growers Pest Management Corporation (Arizona)	Grain sorghum, wheat, barley, alfalfa, cotton, and sugar beets	All major crops
Safford Valley Cotton Growers Cooperative, Inc. (Arizona)	Grain sorghum and cotton	Cotton
Servi-Tech, Inc. (Kansas)	Corn, grain sorghum, wheat, alfalfa, and soybeans	All major crops

cooperatives, even though the farmers grow other crops. In the third instance, men who organized the Growers Pest Management Corporation recognized the interdependence of insects on crops in their area and offered the program for all crops. Pests other than insects were also included. At the beginning, Servi-Tech, the fourth example, offered pest management for all crops and all major pests in the area.

The Safford Valley Cotton Growers Cooperative, Inc., experimented with a new community-wide insect suppression method by using pheromone traps in 1975 and 1976. Growers in most of the organizations used selected pesticides only when absolutely necessary and utilized cultural practices, resistant varieties, and other recommended pest management practices when appropriate. In all cases, farmers obtained insect control recommendations from their own organization's consultant, but often got other pest control advice from Extension, industry representatives, mass media, and past experience. Because Servi-Tech offers a complete crop management service, it has the capability of integrating pest management with other technical crop production practices.

Organization

A regular corporation form is the typical organization for grower pest management programs. It operates through a board of directors and officers much like a cooperative corporation (table 2). Policy decisions and operational procedures are determined by the board, and programs are implemented by the manager and other employees. Edgecombe Spray Program, Inc., Growers Pest Management Corporation, and Safford Valley Cotton Growers Cooperative, Inc., are directed by growers who also make most decisions for the pest management program.

The pest management program in Safford Valley is unique in that an informal group of growers called the Pink Bollworm Committee organizes and directs pest management programs with approval and guidance from the board of directors. Because all cotton producers in the area are members of this organization, the cooperative can organize the program and obtain participation from most of them. It contracts with a private consultant to provide scouting and management counseling with farmers.

Crop Pest(s) Included in the IPM Program	Major Pest Control Means Utilized in the IPM Program
Insects, primarily boll weevil and bollworm	Insecticides and naturally occurring insect enemies
Insects, weeds, and diseases	Naturally occurring insect enemies, cultural practices, and pesticides
Insects, primarily pink bollworm	Naturally occurring insect enemies, pheromone traps, and insecticides
Insects, weeds, and diseases	Pesticides, naturally occurring insect enemies, cultural practices, and variety selection

TABLE 2 - Organizational characteristics

Grower-Owned Organizations	Form of Organization	Membership Qualifications and Voting
Edgecombe Spray Program Inc. (North Carolina)	Regular corporation operating on a cooperative nonprofit basis.	Cotton producers in corporation's area who purchase stock in the corporation. One vote per share of stock possible.
Growers Pest Management Corporation (Arizona)	Nonprofit corporation. Each member has a certificate of membership.	Agricultural producers in corporation's area who pay membership fee. One vote per member.
Safford Valley Cotton Growers Cooperative, Inc. (Arizona)	Cooperative organized to gin cotton. Informal committee of eight grower members (Pink Bollworm Committee) organize IPM program for cooperative.	Cotton producers who are members of the cooperative are appointed to the Pink Bollworm Committee. Committee is chosen to represent growers by geographic areas.
Servi-Tech, Inc. (Kansas)	Regular corporation operating as a cooperative.	Cooperatives that purchase shares of stock in the corporation. One vote per share of stock.

Servi-Tech differs from the other grower-owned organizations because it is owned by cooperatives, not growers, although growers own the sponsoring cooperatives and, in turn, Servi-Tech. Local supply cooperatives organized the service corporation for farmers to obtain technical crop production recommendations, including pest management and other services such as soil testing. The organization is staffed with professional crop specialists, all technically trained in crop production disciplines.

Rather than farmers' organizing their own grower organization to provide pest management services, Safford Valley and Servi-Tech growers used existing farmer-owned cooperatives to form and operate the programs. Grower members of Safford Valley maintain decision-making over the pest management program. Farmers in the Servi-Tech sponsoring cooperatives transferred this responsibility to professional employees in the service organization.

Farmer Services

These organizations offer different combinations of services and products (table 3). Edgecombe Spray confines its attention to two insects, but arranges for all measures (scouts, chemicals, aerial spraying, etc.) to control them. On the other hand, Servi-Tech is concerned with all insects in several crops, as well as with other pests and agronomic needs, but confines itself only to the service of making recommendations.

Board of Directors and Officers	Employees	Who Determines IPM Program
Board of directors has 13 members of which three are chairmen of the operating committees: insecticide, scouting, and finance.	Part-time manager and scouts.	Board of directors, on recommendations by the three operating committees.
Board of directors: 3-25 members as determined by membership. Directors must be members of the corporation. Officers: president, vice-president, and secretary-treasurer.	Manager and part-time scouts.	Board of directors and manager.
Cooperative's seven-member board of directors approves policy and major expenditures for pest management. Approves membership on the Pink Bollworm Committee, which then selects its chairmen.	None for the pest management program. All services are contracted. Cooperative manager and bookkeeper's time provided free for pest management.	Pink Bollworm Committee upon approval by the cooperative's board of directors.
Board of directors: three to nine members as determined by shareholders. Officers: president, vice-president, secretary-treasurer.	Manager, crop specialists and part-time scouts.	Board of directors and manager.

Each organization offers a package of services tailored to meet farmers' needs. For example, cotton is produced in small fields in the Edgecombe Spray area of North Carolina. This makes communitywide spraying highly acceptable for Edgecombe Spray. Such an arrangement may not be needed in areas such as Arizona where cotton is produced more extensively in larger fields.

The willingness to transfer and to accept decisionmaking responsibilities also shapes the program of a pest management association. Because of their small acreages, cotton producers in North Carolina are not reluctant to transfer the decisionmaking function to Edgecombe Spray. Also, many Carolina producers must divert much of their attention and labor resources to harvesting tobacco at the very time cotton is threatened by bollworms. They choose to transfer the whole responsibility of cotton insect control to Edgecombe Spray. The willingness to transfer responsibility is enhanced by the abilities of Edgecombe Spray's leaders.

In other organizations, the spraying decisions are made by growers. Sometimes growers have shaped both the program and organization to their specific advantage and need, but at a relative cost disadvantage. For example, the patrons of Safford Valley probably enjoy the results of group buying but are unable to receive the potential savings of large-quantity deliveries.

Farmer-supervised scouting saves some

TABLE 3 - Integrated pest management services provided crop-producing farmers

Name of Organization	Program Planning	Procuring Chemicals and Aerial Applicator Services
Edgecombe Spray Program, Inc. (North Carolina)	Plans and supplies complete package of services and chemicals. Assumes total responsibility for control of boll weevils and bollworms. Selects pesticides, determines rate of use and projects number of applications.	Solicits sealed written bids from chemical suppliers for season's needs delivered in truckload lots at manager's request. Negotiates detailed written contract with aerial applicator.
Growers Pest Management Corporation (Arizona)	Plans and supplies a complete package of pest management counseling but arranges for neither chemicals nor applicator services.	None by the organization. Each grower purchases his own chemicals and arranges for applicator services.
Safford Valley Cotton Growers Cooperative, Inc. (Arizona)	Plans and arranges for a complete package of services and chemicals for control of pink bollworms, including type of insecticide and rate of application. Grower retains responsibility for deciding if and when cotton will be sprayed.	Solicits sealed written bids for chemicals to be delivered, to one of two airstrips in less than truckload lots, as farmer indicates need. Negotiates verbal contracts with two applicators and one pest management consulting firm. Latter firm recommends pest controls and supplies pheromone traps. Arranges and extends credit for above services.
Servi-Tech, Inc. (Kansas)	Plans and supplies a complete package of crop-management counseling, including pest management. Arranges for neither chemicals nor their application.	None by the organization. Each grower purchases all chemicals and aerial application services for his crops.

Pest Management (Scouting and Recommendations)	Types of Pest Control Provided	Program Records
Supervises field surveillance directly. Scouts check designated fields weekly. Make triplicate reports for farmer, Edgecombe Spray, and Extension Service. Pre-season recommendations altered only for special problems.	Applicator flew 13 sprayings in 1975 on entire cotton acreage at 5-to-7 day intervals. Manager, also a part-time employee of applicator service, coordinate pilots' activities. Chemicals are main pest control technique with fall diapause spraying saving two applications in following year.	Manager records all chemical applications on each field and findings from each scouting of sample fields.
Supervises weekly field checks for insects and periodic checks of other pests. Makes triplicate reports to grower, corporation, and Extension Service. Manager makes pest control recommendations.	None by the organization. Farmer decides if and when chemicals are used.	Manager maintains complete record of scout findings, pest control recommendations and actions on recommendations.
Supplies weekly scouting of every field through pest management company. Scouts fill out triplicate field reports for farmer, Extension Service, and pest management company. Consultant usually recommends action for handling pest outbreaks.	Only 5 percent of acreage received any insecticide during 1975, upon grower request. Heavy reliance placed on cultural practices and native, beneficial insects. Pheromone traps may become a major control device in future years.	Pest management company records findings from scout reports for each field. No regular recordings of insecticide applications are made. Co-op accounts for all costs incurred by each grower.
Fields scouted periodically for pests during growing seasons. Written reports made to farmer and member cooperative. Crop specialist makes pest control recommendations.	None by the organization. Each grower determines pest control program by his response to recommendations of crop specialist.	Organization maintains history of crops raised, scout findings, pest control recommendations, pest control measures, and their effectiveness.

TABLE 4 - Financing integrated pest management

Name of Organization	Capitalization of Organization	Refunds or Dividends
Edgecombe Spray Program, Inc. (North Carolina)	Organization is authorized to issue 20,000 shares of common stock at $5 par value. Minimum capitalization ($300) met through the sale of 60 shares.	Per acre refunds dispersed to shareholders at end of crop year to extent assessments exceed expenses and reserve set-asides for contingencies.
Growers Pest Management Corporation (Arizona)	Non-stock organization. No provisions made in bylaws for raising capital.	No interest or refunds paid by organization to members. Services provided at cost basis to the members.
Safford Valley Cotton Growers Cooperative, Inc. (Arizona)	No special capitalization required for Pink Bollworm Committee's activities. Cooperative's facilities are used by this grower committee.	Services provided at cost. No refunds are paid.
Servi-Tech, Inc. (Kansas)	Organization is authorized to issue shares of common stock to member cooperatives at $1 per share. Cooperatives must purchase a minimum of 5,000 shares at $1 per share.	Dividends upon capital stock may be declared by the board of directors and paid in cash, property or shares of capital stock. Some member cooperatives rebate to participating farmers a part of Servi-Tech charges if cooperative supplies most of farmer's purchases.

Cost of Services and Products to Grower		Grower Payment Plans
1975 payments at $52 per acre for old members and $53 per acre for new members; average 1975 per acre costs were:		Payment for services and products due in two equal installments: 1. May 15 of contract year, and 2. July 15 of contract year.
Scouting	$ 3.03	
Spraying	44.71	
Misc.	.34	
Excess Chg.	3.92	
	52.00	
Refund	4.10	
Net Cost	47.90	
1975 rates per acre:		Service fee paid by June 1 of contract year.
Cotton	$2.50	
Grain sorghum and sugar beets	1.00	
Small grains and alfalfa	0.10	
1975 charges per acre:		Payment of accrued costs made as a deduction from receipts for cotton ginned by co-op. Costs include chemicals and interest charges as well as pest management costs.
Pest management services:	$3.95	
Scouting and advice	(1.95)	
Pheromone traps	(2.00)	
Office services	0.00	
Spraying (at grower request)	1.75	
1975 rates per acre:		Service fee paid in three equal installments: 1. Contract time 2. March 1 of contract year, and 3. 30 days after harvest of the contracted crop.
Irrigated corn and sorghum	$3.00	
Alfalfa, dryland sorghum, and soybeans	1.50	
Wheat	1.00	

money—the relatively modest charges of professional consultants. On the other hand, professional consultants or full-time managers of associations, by devoting full time to the activity, can provide a better supervisory service. Also, they are readily available for timely recommendations and counseling with co-op members.

The above is true of small organizations serving 30 to 50 farmers. If an organization serves a larger number, it should consider hiring the services of a professional pest manager—more like the Servi-Tech approach. Regardless of an organization's size, professionals should make all pest management recommendations.

Financial Aspects

In most states a corporation may organize either with or without capital stock. Each option was exercised by two corporations (table 4).

If the association is a capital stock organization, members receive stock certificates as evidence of their ownership interest. More than one type of stock may be issued, but usually no more than two types are necessary. Most stock cooperatives issue one share of common stock per member to show membership. Preferred stock is issued to show additional capital contributions.

Common stock is usually the voting stock. Preferred stock is generally nonvoting.

If the association is a noncapital stock organization, it issues some kind of certificate—sometimes a revolving fund certificate—to show capital contributions of members. Many nonstock cooperatives raise some or most of their original member capital by means of a membership fee.

A driving purpose behind grower-owned organizations is to provide IPM on a service-at-cost basis. This purpose can be achieved either by pricing the service at cost or by pricing it higher, say "at market level" and refunding the difference between service proceeds and expenses. Two of these example organizations use the first method; two use the second.

Operating on a cooperative basis with distribution of patronage refunds, whether organized under general corporation statutes or special cooperative statutes, can give members additional benefits and aid the association in operating successfully.

Several methods of returning net earnings to patrons are available. Edgecombe Spray, organized under general corporation laws, declares per-acre patronage refunds directly to members out of net earnings. Servi-Tech, also organized as an investor-type corporation, distributes its net earnings to member cooperatives as dividends on their stock. Some of its member cooperatives refund a portion of Servi-Tech charges to their farmer patrons if those patrons purchased most of their inputs through the local cooperatives.

A properly constructed payment plan is critical to grower-owned organizations, especially those with a smaller number of members and those providing expensive services. A prepayment has often proved best. Edgecombe Spray, for example, abides by a rule of "No pay, no spray!" Regardless of the person or conditions, Edgecombe Spray will not spray a farmer's cotton until he pays his assessment. Members of organizations with such circumstances suffer relatively more from each bad debt.

Safford Valley, on the other hand, provides a sharp contrast to the rule. It often accumulates and finances sizeable amounts of charges for its patrons, even their total cost of pest management. The co-op takes a minimum of risk because such charges become a lien against the growers' cotton. Thus, these accounts receivable are usually well secured by the proceeds from the crop.

Legal Documents

Each grower organization seeking to provide IPM services should base these services on at least three legal instruments: (1) articles of incorporation, (2) bylaws, and (3) a service contract, all unique to each organization (table 5). While organizations offering the service may be similar, each set of instruments will be different because of variations in purpose, scope of authority, mode of operation, structure, and indemnification. The instruments should

be distributed to all members for their understanding and reference.

Articles and bylaws are especially important to smaller groups like Edgecombe Spray and Growers Pest Management. Services are provided more directly than by Safford Valley and Servi-Tech.

Safford Valley serves its patrons through the Pink Bollworm Committee, which hires a consultant. Servi-Tech largely serves the patrons of its member cooperatives. In Safford Valley and Servi-Tech, the manager of pest management is more insulated from the control of his patrons than in either Edgecombe Spray or Growers Pest Management.

Through cooperatives, farmers can help themselves in at least two ways. First, they can often raise the quality and lower the cost of supplies and services. Second, through these actions, they can increase the net returns from their crops. For these reasons, any group of farmers interested in starting a grower-owned group for integrated pest management should consider incorporating under cooperative laws.

Properly organized under cooperative laws, there will be provision for: (1) member control through democratic procedures, and (2) operations at cost through a refund process, usually based upon use of the services.

Producer contracts should be straightforward instruments and specify only the necessary terms. They include: (1) services to be supplied by the cooperative, and (2) terms of payment and other grower obligations. Contracts should also contain a paragraph disclaiming responsibility for improper services resulting from "good faith" mistakes. Other items, such as those related to membership, should be excluded. Appendix A gives an example from Safford Valley.

Specifications regarding the purchase of stock and other terms of membership should be included in the bylaws. They should be supplemented by an application for membership and a certificate of membership.

Upon signing a membership application and its acceptance, a member agreeds to abide by the cooperative's articles and bylaws. It could also contain an estoppel clause limiting a member's legal action against corporate officers. Through the certificate, the cooperative recognizes the member and his rights and, in a sense, commits itself and its agents to abide by the same articles and bylaws.

Much confusion and anxiety can be avoided by properly drafted and administered legal documents, such as the articles of incorporation, cooperative bylaws, membership application, membership certificate, and service contract.

All legal documents should be developed by knowledgeable attorneys, preferably those versed in cooperative law within the state served by the organization. Cooperative directors may wish to obtain assistance from the Farmer Cooperative Service (FCS).[1]

Supplier contracts may be as simple or as comprehensive as conditions warrant. For example, a well detailed contract seems advisable with aerial applicators, but only letters of intent are needed from chemical suppliers.

Lastly, any organization supplying IPM should protect itself and its agents. Its bylaws should contain an indemnification clause. This clause should promise to reimburse the organization's officers and directors for court judgments and other losses suffered because of mistakes of judgment made while representing the cooperative. This promise may be covered by insurance. This promise would seem important considering the potential risk inherent in the misunderstanding and handling of pest management, especially with regard to determining economic thresholds of pests and the application of pesticides.

Written contracts with suppliers are preferable. While Safford Valley has used verbal contracts successfully for several years, this practice is not recommended.

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[1] For example, FCS can supply "Sample Legal Documents," a part of *Legal Phases of Farmer Cooperatives*, Information Bulletin 66.

TABLE 5 - Legal aspects of programs for integrated pest management

Name of Organization	Articles and Bylaws	Service Contract
Edgecombe Spray Program, Inc. (North Carolina)	Articles accord with General Corporate Law of North Carolina permitting operations far beyond pest management. Written bylaws do not exist, making most procedures interpretable, such as: voting of members, duties of directors, principles of operations.	Conditions detailed in 83 typewritten lines. Contract supplements Articles by: 1. Requiring *minimum* of one share of stock in corporation; 2. Promising a refund in case surplus money accumulates; and 3. Including an estoppel phrase in an effort to protect the corporation and its agents.
Growers Pest Management Corporation (Arizona)	Incorporated as a nonstock corporation. Bylaws cover organizational procedures such as purpose, membership, election, meetings, financial aspects and duties of directors and officers.	Agreement specifies terms of membership, assigns acres in scouting program, specifies fees, and refers to bylaw provisions.
Safford Valley Cotton Growers Cooperative, Inc. (Arizona)	Pest management activities, as administered by Pink Bollworm Committee, are performed within framework of cooperative's articles and bylaws, as they may have been revised to accommodate activity.	First 15-line contract authorizes co-op to deduct separate per-acre charges for scouting and spraying from proceeds of cotton ginnings. It also authorizes field checks. Second, 5-line document authorizes the use of pheromone traps.
Servi-Tech, Inc. (Kansas)	Incorporated as a regular corporation. Bylaws cover organizational and operational procedures such as capital stock, meetings, elections, financial matters, and duties of directors and officers.	Service contract specifies services and payments. It also requires grower to provide information necessary for recommendations and crop records, and to notify Servi-Tech when crops are sprayed with toxic chemicals.

Supplier Contracts	Indemnification and Liability Insurance
Contracts with chemical suppliers are sealed upon acceptance of written offers. Contracts with aerial applicators (125 written lines): (1) describe services; (2) prescribe weekly payment (lagged two weeks); (3) prevent misuse of chemicals; and (4) give Edgecombe Spray first call on applicator services.	Shareholders, through corporation, have made no promise to indemnify officers held liable for "good faith" mistakes. They have not authorized corporation to insure officers for such mistakes.
None.	Grower agreement has a liability disclaimer specifying that farmer makes the final decision about pest control and that corporation is not liable for crop damages due to lack of pest control. Bylaws provide for indemnification of directors and officers for expenses incurred because of mistakes made in "good faith."
Accepted written bids from chemical suppliers constitute contract. Verbal contracts bind co-op to pest management company and aerial applicators.	Co-op has liability insurance which implies a willingness to indemnify officers for mistakes made in "good faith." Grower contract lessens likelihood of lawsuits, but seems limited to damage caused by scouts while on farm premises.
None.	Disclaimer clause in crop-service contract states that while Servi-Tech will provide crop recommendations based upon available research and experience, the corporation will *not* guarantee results because of the many uncontrollable factors affecting crop production.

STARTING A NEW IPM SERVICE ORGANIZATION

Starting a new service organization will take much time and organizational ability. It will be easier if it is done by a small committee working with a knowledgeable consultant such as a county Extension agent. Assistance also may be needed from Extension pest management and crop specialists. Guidelines exist for determining minimal acreages and other important factors.

Organizers should give careful thought to requirements for a successful operation, including the annual commitments farmers must make. They should think through the kind of services their organization should offer. Some provide pesticide buying services as well as pest management scouting.

Farmer Cooperatives Can Add a Service Activity

Existing farmer cooperatives can add an IPM service activity. As in a newly formed organization, the range of services can vary from pest scouting and recommendations only, to a complete service including spraying, purchase of products, and other crop management services.

Wherever an IPM service is added, it is probably best to keep it apart from the sales division. Conflicts can arise between the IPM service and the desire by the sales staff for increased pesticide sales. If a cooperative does add a service division, a special committee should be established to advise the staff.

What Is The Cooperative's Role in IPM?

A major role of the cooperative in IPM is to encourage farmers to use IPM services. This can reduce the farmer's costs and improve the environment.

The cooperative—particularly a local cooperative and its directors—can be influential in establishing either a new IPM service organization or in providing that service. A fieldman of the cooperative could assist in organizing the IPM cooperative.

Regional cooperatives could assist by providing backup staff to new IPM service organizations in the fields of agronomy, chemicals, and fertilizers. They could inform farmers of IPM benefits through newsletters.

Extension Service Assistance in Developing IPM

Since 1972, the Extension Service of the U.S. Department of Agriculture, and the State Cooperative Extension Services, have carried out more than 40 demonstration programs in 33 states, involving 16 commodities on about 1 million acres. During this period, growers have been taught the principles of pest management, and were assisted in organizing pest management associations. Several thousand scouts were trained.

The number of private consultants and quality of services provided were dramatically increased as a result of the publicly supported pest management demonstrations. Since this program began, the number of grower pest management associations has grown from fewer than 12 to more than 120.

The Extension Service has sponsored 13 national pest management workshops for training personnel. Research, regulatory, and industry personnel, as well as many farmers and farm organization people, have participated. Eight documentary films have been made on pest management subjects. Many states have developed IPM pamphlets for growers.

In the future, Extension plans to do adaptive and demonstrational work to broaden the scope and improve the effectiveness of IPM technology. Extension also will provide educational programs and technical assistance to farmers, managers of cooperatives, private consultants, and industry. This will include training scouts and other personnel needed in IPM. Many states are developing computer systems for data handling and prediction of pest outbreaks. These computer programs will be available to assist those who advise farmers on pest management decisions.

State Extension specialists working in pest management and those working with cooperatives should meet and discuss the issues

relating to IPM. Discussion issues should include the best alternatives for farmers to develop an organization to provide their own pest management delivery systems.

Specialists working with cooperatives can help farmers analyze alternative ways of forming IPM organizations and assist them in organizing and in developing bylaws.

The pest management specalists can offer technical input for bylaws and other documents, such as agreements and contracts.

Both types of specialists can work with existing cooperatives, other organizations, and groups of farmers in developing IPM service organizations or IPM divisions in existing cooperatives.

County agents can help farmers organize IPM delivery systems, through existing or new organizations. One approach is to work with local farm supply cooperatives, either to add an IPM service or assist in developing one for members of several local farm supply cooperatives. Work with farm supply cooperatives should stress the importance of their providing an IPM delivery system, rather than trying to sell more chemicals.

The cooperative is owned by farmers. It is designed to help them obtain goods and services, not to provide high returns on invested capital and profit management. A number of publications are available to assist groups wishing to form a farmer-owned organization to provide IPM services.

HOW FARMERS CAN OBTAIN IPM SERVICES

Farmers can contact their local Extension agent to learn who is providing IPM services in their community. It may be private consultants, existing business organizations (including cooperatives), or an already-existing IPM service grower-owned organization.

If IPM services are not available, the Extension agent will discuss their needs. Perhaps a committee can be set up to examine the potential need for IPM services. It is a relatively simple process to organize a new IPM service organization. If the county agent is not familiar with IPM services, he can contact his state pest management specialist for information.

APPENDIX A
(Sample Contract)

AUTHORIZATION

For a valuable consideration, I hereby authorize SAFFORD VALLEY COTTON GROWERS COOPERATIVE, INC., to deduct from the proceeds of any cotton ginned by it for me, the amount advanced by them for me for field check service on damaging insects, at the rate of _____ per acre. This service will cover the period June 15 through September 15, _____. I further agree that at such time the Pink Bollworm population reaches 15 percent, for any field, that I will authorize the spraying program for that field, to continue for the balance of the growing season.

For a valuable consideration, I hereby authorize SAFFORD VALLEY COTTON GROWERS COOPERATIVE, INC., to deduct from the proceeds of any cotton ginned by it for me the amount advanced by them for me for spraying an insecticide requested by me, at the rate of _____ per acre for 3 gallon spray per acre, and _____ per acre for 5 gallon spray per acre. It is further agreed that should the actual cost be less than the above rates, that the rates per acre will be reduced proportionately.

I further authorize the SAFFORD VALLEY COTTON GROWERS COOPERATIVE, INC., authorized representatives to enter upon the premises farmed or owned by me, to perform field check service and spray program and agree to hold SAFFORD VALLEY COTTON GROWERS CO-OPERATIVE, INC., and its authorized representative harmless for any liabilities or damages resulting from performing this service.

_____ _____

GROWER OR LANDOWNER DATE

_____ _____

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